ARTIFICIAL RUBBER.

L. E. SAYRE.

IN another paper presented at this meeting reference has been made to the subject of rubber in connection with corn oil. The writer had an opportunity of examining some splendid examples of artificial rubber made from corn oil as a starting point, exhibited at one of the recent meetings of the American Chemical Association at Urbana, Ill., and this has become such a matter of interest to the writer that he has thought it worth while to put into a compact form some of the points of value in connection with the subject.

It is safe to say that there are very few articles made of pure rubber. In the manufacture of rubber goods some sort of "mixings" or "fillings" or "compounding materials" are almost invariably employed. The mixings used are of various kinds, according to the use of the rubber, the color, surface and cost desired. Oils, waxes, especially paraffin wax, asphaltum and pitch, sometimes resins or shellac, are used in mixings. Of the fillings, whiting, plaster of paris, gypsum, the barytes, magnesia and litharge are the most frequent. Some of the synthetic rubbers or other substitutes for rubber are used with real rubber in the manufacture of rubber goods. I present here a sample of asphaltum such as is used in paving, and which has a value in the manufacture of commercial rubbers.

I also present here a rubber substitute, artificial rubber, so called, which on analysis proved to have the following composition:

Rubber	29 %
Asphalt compound	15
Lithiphone ($BaSO_4+ZnS$)	15
Litharge (PbO)	10
Sulphur	1

This rubber was used for the Schau cone tire, but this was proven to be, after some time, not a success. At present, in the making of these shoes 75 percent of rubber has been found necessary to give satisfaction. The composition of the rubber substitute is stated to be bitumen (Trinidad asphalt) and sulphurized oil. Bitumen is known in the trade as mineral rubber.

There are many different patents for artificial rubber, but none of these can as yet be regarded as really successful substitutes. The white substitutes are made from vegetable oils, usually rape or castor oil combined with chloride of sulphur in such a way as to completely saturate the oil. The chloride of sulphur is usually diluted with benzine. The brown or black substitutes are made by adding sulphur, *i. e.*, by the sulphuration of vegetable oil, usually oxidized oil. Adding vaseline and some mineral oil and paraffin wax before sulphurization is sometimes employed.

As before stated, corn-oil products producing rubber sponges and rubber materials of various kinds the writer has seen on exhibit. For exhibit, I present herewith a sample of rubber substitute made of corn oil, which has been vulcanized.

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CORN OIL AND A NEW POINT OF VIEW IN FOOD VALUES.

L. E. SAYRE.

AT a former meeting of the Academy (1915) the writer presented a paper on corn oil, in which he endeavored to show the value of this product in making of medicinal preparations, and intimated that its use could be extended in various directions, not least among which was in the form of a dietetic as a salad oil and in salad-oil dressings. Since that time a very large number of experiments have been performed and further study of the subject of corn oil has been made.

Ever since corn has been used in large quantities for the purpose of the manufacture of starch there has existed a desire to recover the oil from the kernel, which would otherwise be wasted; and as the average Indian corn contains from 4 to 5 percent of oil, the importance was realized by the manufacturers of starch, as some of these used as much as from 20 to 40,000 bushels of corn per day. It is needless to say that the kernel or germ of the corn contains the oil, as has been before stated, to the amount of about 4 or 5 percent. In order to recover this the kernel must be separated, and then a process of hydraulic pressure is used. After the crude oil is recovered the process of refinement follows. This latter process has become very much improved, until to-day we have a product